REMARKS/ARGUMENTS

This Response is responsive to the Final Office Action dated January 7, 2009. Applicant has not amended the claims. Claims 1-6, 8-16, 18-36 and 38-41 remain pending.

Claims 1-24 and 31-41

Claims 1–24 and 31–41 stand rejected under 35 USC § 103 as being unpatentable over Tong et al. (US 5,982,434) in view of Katto (US 5,657,085). For these rejections, the Final Office Action recognized that Tong fails to suggest techniques for generating multiple descriptions of compressed data. Specifically, the Final Office Action recognized that Tong fails to suggest a technique of grouping transform coefficients into layers based on energy distribution, entropy coding a first number of the layers to generate a first description of compressed data, and entropy coding a second number of the layers to generate a second description of compressed data.

However, the Final Office Action cited Katto as suggesting these features, and concluded that it would have been obvious to a person of ordinary skill in the art to modify the encoding techniques of Tong to generate multiple descriptions of compressed data by grouping the transform coefficients into layers based on energy distribution, entropy coding a first number of the layers to generate a first description of compressed data, and entropy coding a second number of the layers to generate a second description of compressed data, as required by claims 1-24 and 31-41.

Applicant respectfully traverses the rejections. Contrary to the analysis in the Final Office Action, Katto does not suggest any techniques for generating multiple descriptions of compressed data. Moreover, Katto does not suggest any techniques that group the transform coefficients into layers based on energy distribution, entropy code a first number of the layers to generate a first description of compressed data, and entropy code a second number of the layers to generate a second description of compressed data, as required by claims 1-24 and 31-41.

The Final Office Action misinterpreted Katto. In particular, the Final Office Action misinterpreted the two different VLC circuits of Katto as entropy coding a first number of the layers to generate a first description of compressed data, and entropy coding a second number of the layers to generate a second description of compressed data. However, the two different VLC circuits of Katto do not entropy code a first number of the layers to generate a first description of

compressed data, and entropy code a second number of the layers to generate a second description of compressed data, as required by claims 1-24 and 31-41. Instead, the first VLC circuit 5 in Katto performs variable length coding with respect to scanned coefficients, and the second VLC circuit 6 in Katto performs variable length coding with respect to "supplemental information" such as motion vectors or the quantization step sized used in the coefficient scanning of the coefficients.

Contrary to the interpretation of Katto advanced in the Final Office Action, nothing in Katto suggests any technique of entropy coding a first number of the layers to generate a first description of compressed data, and entropy coding a second number of the layers to generate a second description of compressed data. Quite the contrary, Katto merely implements two different VLC circuits 5 and 6 to generate one description of the compressed data. The first VLC circuit 5 in Katto conducts variable length coding with respect to scanned coefficients, and the second VLC circuit 6 in Katto performs variable length coding with respect to "supplemental information." After such variable length coding by VLC circuits 5 and 5, the scanned coefficients and supplemental information are then multiplexed via multiplexing circuit 7, which results in a single description of the compressed data, and not multiple descriptions of compressed data, as required by claims 1-24 and 31-41.

Independent claim 1 recites a method for generating multiple descriptions of compressed data. The method of claim 1 requires generating transform coefficients from input data, quantizing the transform coefficients, generating an energy distribution of the quantized transform coefficients, grouping the transform coefficients into layers based on the energy distribution, entropy coding a first number of the layers to generate a first description of compressed data, and entropy coding a second number of the layers to generate a second description of compressed data.

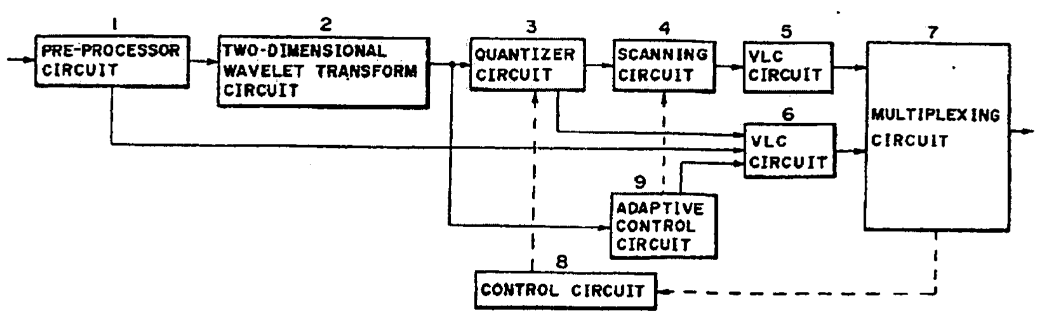
Thus, according to claim 1, multiple descriptions of compressed data are generated. Specifically, the transform coefficients are grouped into layers, and then two different entropy coding processes are performed on two different groups of the layers to generate two different descriptions of compressed data. According to claim 1, entropy coding occurs with respect to a first number of the layers to generate a first description of compressed data, and entropy coding also occurs with respect to a second number of the layers to generate a second description of compressed data.

As outlined throughout Applicant's specification, these features are very useful to facilitate layered coding that targets several different applications, such as digital cinema, HDTV, SDTV, DSS and thumbnails. According to the claimed invention, different numbers of the layers are entropy coded separately in order to generate different descriptions of compressed data. In this way, the claimed invention allows for the generation of multiple descriptions of compressed data in order to support several different applications, such as digital cinema, HDTV, SDTV, DSS and thumbnails.

Tong fails to disclose or suggest any techniques for generating multiple descriptions of compressed data. Tong concerns an image coding scheme based on wavelet transforms (i.e., sub-band transforms), but the image coding scheme of Tong does not generate multiple descriptions of compressed data. Moreover, Tong fails to disclose or suggest any techniques that include grouping the transform coefficients into layers based on the energy distribution, entropy coding a first number of the layers to generate a first description of compressed data, and entropy coding a second number of the layers to generate a second description of compressed data. The Final Office Action acknowledged these deficiencies of Tong.

However, the Final Office Action cited Katto as suggesting these features, and concluded that it would have been obvious to a person of ordinary skill in the art to modify the encoding techniques of Tong to generate multiple descriptions of compressed data by grouping the transform coefficients into layers based on energy distribution, entropy coding a first number of the layers to generate a first description of compressed data, and entropy coding a second number of the layers to generate a second description of compressed data, as required by claims 1-24 and 31-41.

Again, however, the Final Office Action misinterpreted Katto. FIG. 3 of Katto, which was cited and relied upon in the Final Office Action, is reproduced below.



While FIG. 3 does show two different VLC circuits 5 and 6, these two different VLC circuits 5 and 6 do not entropy code a first number of the layers to generate a first description of compressed data, and entropy code a second number of the layers to generate a second description of compressed data, as required by claims 1-24 and 31-41. Instead, the first VLC circuit 5 in Katto performs variable length coding with respect to scanned coefficients, and the second VLC circuit 6 in Katto performs variable length coding with respect to "supplemental information" such as motion vectors or the quantization step sized used in the coefficient scanning.

In column 7, for example, Katto describes FIG. 3 as follows:

> A scanning circuit 4 scans, corresponding to a decided scanning pattern, quantized output two-dimensional wavelet transform coefficients, and obtains a one-dimensional signal series. With scanned from transform coefficients included in low frequency band to that included in high frequency band, a one-dimensional signal series is generated, where the scanning pattern follows FIG. 2A in each frequency band and FIG. 2C between respective frequency bands. The VLC circuit 5 practices variable-length-coding to the one-dimensional signal series of the scanning circuit 4, corresponding to a preset variable length coding table. At this coding, when zero continues to the last transform coefficients, coding for a signal series is ended using a symbol indicating end of scanning. Corresponding to a preset variable length coding table, VLC circuit 6 performs variable-length-coding of supplementary information such as a motion vector given by the preprocessor circuit 1 or quantizing step size given by the quantizer circuit 3, etc. The multiplexing circuit 7 multiplexes a variable length code, transforms the result as an output of the coder; it is equipped with a transmission buffer. A rate control circuit 8 monitors code quantity transmitted to the multiplexing circuit 7, controls quantizing step size to the quantizer circuit 3, corresponding to state of the transmission buffer.

Clearly, VLC circuits 5 and 6 do not entropy code a first number of the layers to generate a first description of compressed data, and entropy code a second number of the layers to generate a second description of compressed data, as required by claims 1-24 and 31-41. Instead, as explained in the passage of Katto above, the first VLC circuit 5 "practices variable-length-coding to the one-dimensional signal series of the scanning circuit, while VLC circuit 6 "performs variable-length-coding of supplemental information such as a motion vector given by the preprocessor circuit 1 or quantizing step size given by the quantizer circuit 3." The multiplexing circuit 7 then "multiplexes a variable length code."

Accordingly, the two different VLC circuits 5 and 6 are used for different portions of one description of compressed data, and do not generate two different descriptions. VLC circuit 5 codes the scanned coefficients, and VLC circuit codes supplemental information. The combination of these scanned coefficients and supplemental information is collectively one description of compressed data. Nothing in Katto suggests any techniques for generating multiple descriptions of compressed data. Accordingly, Katto does not suggest any techniques that group the transform coefficients into layers based on energy distribution, entropy code a first number of the layers to generate a first description of compressed data, and entropy code a second number of the layers to generate a second description of compressed data, as required by claims 1-24 and 31-41.

On this basis, the rejections of claims 1-24 and 31-41 must be withdrawn. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejections of claims 1-24 and 31-41. Applicant does not necessarily acquiesce to any of the former rejections or prior art interpretations advanced in the Final Office Action, and Applicant reserves the right to present additional arguments.

Claims 25-30

Claims 25–30 stand rejected under 35 USC § 103 as being unpatentable over Tong et al. (US 5,982,434) in view of Itawaki et al. (US 2002/0085584) and further in view of Katto (US 5,657,085). These rejections are improper for similar reasons to those advanced above. Namely, contrary to the analysis in the Final Office Action, Katto fails to disclose or suggest techniques that extract a first selected number of layers from an inventory based on a first bit rate requirement to generate a first description of the compressed data, and extract a second selected number of layers from the inventory based on a second bit rate requirement to generate a second description of the compressed data.

Katto does not suggest any techniques for generating multiple descriptions of compressed data. Moreover, Katto does not suggest any techniques that extract a first selected number of layers from an inventory based on a first bit rate requirement to generate a first description of the compressed data, and extract a second selected number of layers from the inventory based on a second bit rate requirement to generate a second description of the compressed data.

Claim 25 recites a method for generating compressed data based on quantized transform coefficients of the data. The method comprises accessing an inventory of multiple layers of compressed data generated based on an energy distribution of the quantized transform coefficients, wherein the multiple layers comprise different entropy coded layers of compressed data, extracting a first selected number of layers from the inventory based on a first bit rate requirement to generate a first description of the compressed data, and extracting a second selected number of layers from the inventory based on a second bit rate requirement to generate a second description of the compressed data. Claims 27 and 29 recite similar features to those of claim 25, in formats consistent with other statutory classes of patentable subject matter.

As outlined above in the discussion of claim 1, the analysis of Katto in the Final Office Action is flawed and based on misinterpretations. In particular, Katto fails to suggest any techniques that extract a first selected number of layers from an inventory based on a first bit rate requirement to generate a first description of the compressed data, and extract a second selected number of layers from the inventory based on a second bit rate requirement to generate a second description of the compressed data.

By maintaining an inventory that is generated based on an energy distribution of the quantized transform coefficients, Applicant's claimed invention may provide a useful mechanism for generating two or more different descriptions of compressed data. In this case, the claimed invention (of claims 25, 27 and 29) requires extracting a first selected number of layers from the inventory based on a first bit rate requirement to generate a first description of the compressed data, and extracting a second selected number of layers from the inventory based on a second bit rate requirement to generate a second description of the compressed data.

In the analysis of claims 25-30, the Final Office Action stated that "the combination of Tong et al. and Itawaki et al. does not teach a second encoder for entropy coding a second number of the layers to generate a second description of compressed data, and extracting a second selected number of the layers to generate a second description of the compressed data."[1] However, the Final Office Action stated that Katto teaches these features.

[1] Applicant notes that the Final Office Action mischaracterizes the features of claims 25-30, as these claims do not require a second encoder. Nevertheless, the analysis of the Final Office Action is still flawed insofar as Katto does not describe any techniques for generating multiple different descriptions of compressed data, much less the specific features of claims 25-30. For example, Katto does not describe extracting a first selected number of layers from the inventory based on a first bit rate requirement to generate a first description of the compressed data, and extracting a second selected number of layers from the inventory based on a second bit rate requirement to generate a second description of the compressed data, as required by claim 25.

Specifically, the Final Office Action seems to argue that multiplexing circuit 7 from FIG. 3, which is reproduced above, teaches extracting a first selected number of layers to generate a first description of compressed data, and extracting a second selected number of layers to generate a second description of compressed data. Multiplexing circuit 7 does not perform the functions that the Final Office Action attributes to this circuit.

On the contrary, multiplexing circuit 7 simply "multiplexes a variable length code." In particular, multiplexing circuit 7 combines the output of VLC circuits 5 and 6, which form different portions of one specific description of the compressed data. Again, VLC circuit 5 "practices variable-length-coding to the one-dimensional signal series of the scanning circuit," while VLC circuit 6 "performs variable-length-coding of supplemental information such as a motion vector given by the preprocessor circuit 1 or quantizing step size given by the quantizer circuit 3." The multiplexing circuit 7 then "multiplexes a variable length code" by combining the outputs of circuits 5 and 6 to form one complete description of compressed data.

Accordingly, multiplexing circuit 7 does not perform the functions that the Final Office Action attributes to this element. In particular, multiplexing circuit 7 does not extract a first selected number of layers to generate a first description of compressed data and extract a second selected number of layer to generate a second description of compressed data. Indeed, Katto describes nothing that can be reasonably interpreted as generating two different descriptions of compressed data, much less the specific features of claims 25-30.

Contrary to the statements advanced in the Final Office Action, Katto does not describe extracting a first selected number of layers from the inventory based on a first bit rate requirement to generate a first description of the compressed data, and extracting a second selected number of layers from the inventory based on a second bit rate requirement to generate a second description of the compressed data, as required by claim 25. For this reason, the rejection of claim 25 cannot stand. Similar arguments apply to independent claims 27 and 29, as well as the respective dependent claims. Claims 25-30 should be immediately allowed.

CONCLUSION

On the basis of the arguments presented above, Applicant submits that the application is in condition for allowance, for which early action is requested. Please charge any fees or overpayments that may be due with this response to Deposit Account No. 17-0026.

Respectfully submitted,

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